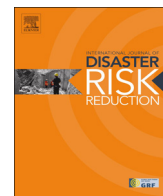


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A comparison of the governance landscape of earthquake risk reduction in Nepal and the Indian State of Bihar

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ABSTRACT

On 25 April 2015, a Mw 7.8 earthquake struck central Nepal, killing more than 8700 people. An earthquake of this magnitude has long been anticipated in Nepal and the neighbouring northern Indian state of Bihar, which straddle the active Himalayan frontal fault system. Drawing on field research undertaken before the earthquake, this paper traces the progress made in earthquake risk reduction efforts at the national scale in Nepal and at the sub-national scale in Bihar. With their contrasting 'governance landscapes', we examine the political and institutional context and power relations among different stakeholder groups, as well as the interests and political will motivating earthquake risk reduction. Nepal is a post-conflict country, with a weak legislative and institutional setting for earthquake risk reduction, and a multitude of different stakeholders (government, multi and bi-lateral donors, UN organisations, and national and international NGOs) engaged in the disaster risk reduction process. Bihar, by comparison, has a strong, hierarchical, sub-national government system with minimal influence of non-government stakeholders in earthquake risk reduction. While Nepal appears to have progressed further in strengthening earthquake resilience, the institutional structures in Bihar are stronger and could potentially support more sustainable resilience building in the long-term. The role of individual 'champions' in both instances (in Nepal among a national NGO, donors and multilateral agencies, and in Bihar within the government) has been instrumental in shaping the earthquake risk reduction agenda and initiatives.

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1. Introduction

On 25 April 2015 a Mw 7.8 earthquake struck central Nepal (now called the Gorkha Earthquake), with its epicentre located 80 km northwest of the capital city Kathmandu in Lamjung District. This was followed, less than three weeks later, by a Mw 7.3 earthquake northeast of the capital in Dolakha District. In Nepal, more than 8700 people were killed and 20,000 injured in this earthquake sequence, with more than 500,000 homes destroyed [92]. In Bihar, on the Indian side of the border with Nepal, 60 people were killed and hundreds injured, with many districts in the north of the state affected [11].

An earthquake of this magnitude has long been anticipated in the Himalaya [5]. Loss estimation scenarios based on a repeat of the 1934 earthquake in modern day Kathmandu have suggested an order of magnitude higher death toll than resulted from the 25 April 2015 event [23,53]. In 1934 a similar number of people had died, with 20% of the building stock in the Kathmandu Valley destroyed and 40% damaged [23]. Eighty-one years later the

Kathmandu Valley was home to far more people living at much higher density. One might ask, why were the effects not as bad as had been anticipated by the scenarios? In part, there was luck. The earthquake had a smaller magnitude than the 1934 earthquake (M 7.8 versus 8.4), leading to lower intensities. The earthquake struck at noon on a Saturday. Schools were closed. Many people were out of doors. But there have also been several years of intensive work on preparedness and risk reduction which may have also been a factor.

This paper will not attempt to answer this question. Time and in-depth forensic studies will hopefully shed light on the factors that accounted for the damage and loss in Nepal in April 2015. Instead, drawing on field research undertaken before the earthquake, this paper explores the risk reduction efforts at the national scale in Nepal and at the sub-national scale in Bihar, with a particular focus on the role of governance and political will¹ in earthquake risk reduction. In so doing, the paper responds to a call

¹ It will emerge in context as we develop our argument below that we mean by 'political will' a determination or resolve on the part of senior officials and leadership in government and the opinion-forming elite in society to implement and enforce a policy. The sources and constraints on political will are many and varied. They include electoral pressure, the logic of party-political advantage, international (e.g. donor) influence, legal or bureaucratic requirement and material benefit [106].

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for more comparative studies examining the political processes that create both incentives and disincentives for DRR [101].

While weak governance and lack of political will are frequently cited as barriers to effective DRR [101,106], there remains a lack of evidence on the effectiveness of different governance systems for DRR [11,96]. This paper provides some of the evidence called for. Empirical studies suggest that important governance issues underlie the effectiveness of earthquake risk reduction practices, revealing, for example, that earthquake mortalities are greater in newer than older democracies [52] and that public sector corruption is positively correlated with earthquake deaths [27]. While critical structuralist accounts of the underlying causes of disasters exist (see, for example, [7], [36], [103] and [104]), little attention has been given to the specific processes behind these findings. For example, Williams notes that for the factors identified in econometric studies correlated with the number of people who die in disasters, there is a limited understanding of how the mechanisms and causal processes operate in practice. This paper aims to contribute to this understanding by adopting a more qualitative approach to unpack the mechanisms and processes underlying earthquake risk reduction initiatives within the broad 'governance landscape' of DRR.

The state or government is a prominent stakeholder within the DRR governance landscape. For Wilkinson, the government has five key roles:

- as providers of disaster risk reduction goods and services;
- as risk avoiders;
- as regulators of private sector activity;
- as promoters of collective action;
- as coordinators of multi-stakeholder activities.

In the context specifically of earthquake risk governance, Wilkinson's principles take concrete forms.

- Risk reduction through provision of seismic information, strengthening critical infrastructure including schools and health facilities, risk awareness training and preparedness, mapping of possible secondary hazards such as landslides;
- Risk avoidance through safe construction methods in new public buildings and facilitation of safe private sector construction (e.g. through training and financing arrangements);
- Private sector regulation through appropriate building codes and their enforcement;
- Promotion of collective action through decentralized programming at sub-national and local scales including community based disaster risk reduction;
- Coordination of multi-stakeholder activities including scientists, planning departments, building and urban management, local authorities, NGOs and humanitarian organizations.

This suite of actions constitutes a state-of-the-art menu for national and sub-national governments backed up by a great deal of engineering experience and research in natural and social sciences [56]. All these actions are considered feasible, even in low-income countries, although in some (as we will see in the case of Nepal), donors pay for the much of this activity. There is considerable evidence that these actions save lives, assets and losses to government and donors from the destruction of investments [108].

In our comparative treatment of risk governance in Nepal and Bihar, we define 'progress' or 'success' as effective function in one or more of these roles. This is clearly a minimalist definition of 'success'. As noted above, ideally one would be able to parse the risk-creating versus risk-reducing factors and show that 'effective functioning' in such roles did, in fact, prevent deaths and reduce

damage. It is too early, and, perhaps also a quixotic challenge to understand a complex event in so much detail. Time will tell. For now, however, we help to lay the foundation for better understanding by focusing on what we call the 'governance landscape'.

2. Understanding the 'governance landscape' for earthquake risk reduction

The framework for this research draws upon political economy analysis (PEA) which "is used by development agencies to enhance their understanding of the economic, political and social processes that drive or block policy reform" [17]. PEA examines the incentives, interests, institutions and power relations facing key stakeholders and "focuses on how power and resources are distributed and contested in different contexts and the implications for development outcomes" [20]. The Department for International Development [20] also suggest that PEA seeks to understand what drives political behaviour and how this shapes particular policies and programmes. It examines the interests and incentives facing different groups; the role that formal and informal institutions play; the role of external drivers; and the impact of values and ideas on political behaviour and public policy. Drawing on the key themes of PEA, we begin by setting out a framework for analysing what we call the 'governance landscape' for DRR. The framework considers both structure (systemic features of the 'governance landscape') and agency (the incentives and disincentives that shape the behaviour of actors) and the interactions between the two [28].

We use the term 'governance landscape' in this paper to refer to three specific aspects of DRR governance. First is what we call the 'stakeholder context' of DRR. This refers to the stakeholders involved in implementing DRR, the relationships among them, and the role of power in these relationships [59]. As noted elsewhere (e.g. [49]) DRR currently takes place within a broader neo-liberal agenda where the functions of the nation state are being redistributed 'upwards' to international institutions, 'downwards' to regional and local tiers of authority and 'outwards' to a range of non-state actors [12].

The sharing of power among stakeholders has undoubtedly generated a more complex and challenging governance landscape for executing any particular policy objective. Goodwin [34] argues that the policy world is now made up of diverse, overlapping and integrated networks often operating beyond effective control by formal structures of government (e.g. in the case of disaster risk reduction, the Hyogo Framework for Action – now the Sendai Framework for Action – and their associated global and regional platforms). Ojha et al. [65, p. 365] go as far as to suggest that the factor that "hinders effective governance in most situations is the prevalence of complex interplay of power and knowledge among diverse groups of actors with unequal command over resources to influence mutual interactions that underpin governance actions". This is also the view of the civil society and academic authors of the *South Asia Disaster Report 2012/13* [26], who specifically frame disaster risk as driven by use and misuse of economic power at global, regional and national scale, calling attention to the intimate link between 'development' (e.g. overseas direct investment) and disaster risk creation. A similar view is advanced in the [95] Global Assessment Report on Disaster Risk Reduction in which the UNISDR specifically single out movements of international finance capital as contributing to the creation of disaster risk. It is therefore useful to situate DRR in terms of this broader political context to fully explore the influence of multiple stakeholder groups.

The second aspect of the 'governance landscape' we refer to as the 'institutional context' or the specific 'apparatus' for enforcement of regulations and standards and the delivery of DRR

initiatives (e.g. formal institutional structures, legislative and judicial context and divisions of responsibilities and roles for DRR). Some scholars suggest that the political location of the responsible agency at national, apex scale, such as a so-called National Disaster Management Authority, is of particular relevance to DRR. Proximity to national political power is thought to influence the extent of authority for mainstreaming DRR [55]. Policy and institutional coherence is important but can be difficult to achieve due to the superimposition of successive waves of public sector reform, often under donor influence, giving rise to persistently ill-defined mandates or overlapping jurisdictions [8]. In DRR, 'mainstreaming' throughout different sectors implies an intention to smooth out such inconsistencies, but in so doing a high level of complexity in governance arrangements, roles and responsibilities may emerge.

The third aspect of the 'governance landscape' explored here can be termed 'incentive context'. We refer here to incentives and disincentives that affect the decisions of government staff at all levels. These may be influenced by career aspirations, administrative rules, professional and personal ethical principles, legal responsibility and peer pressure [106]. For Williams [101], key factors for consideration include: disincentives towards public goods provision, with a preference towards providing private goods for political patronage and engaging in 'visible' activities for winning political support; rent seeking and corruption (e.g. collusion between corrupt building contractors and building inspectors); political costs of controlling settlement (e.g. imposing building restrictions on sought-after land); powerful interest groups (e.g. with lobbying power); vested interests blocking organisational reform (e.g. decentralisation, mainstreaming); and political costs (e.g. post-disaster leadership changes).

Williams [101, p. 7] also emphasises the importance of political will and suggests that it is the primary reason that many programmes fail to deliver in their expected benefits which "is reflected in the low priority and poor level of resources for DRR ... not enough attention has yet been given to the question of how political will arises and how to strengthen it". Individuals with high levels of political will can be seen as champions and in climate change research some attention has been given to the role of 'champions' in raising awareness as a vehicle for behavioural change [81]. Although Williams [101] has noted the importance of champions, little attention has been given to the role of champions in DRR research. In both the Nepal and Bihar situation, champions in earthquake risk reduction have had a powerful influence. They have been the ones who have, at least for a time, motivated others and generated political will. Wisner et al. [106] caution that leadership is insufficient unless it is sustained by effective social demand and leaders watch over implementation, as there seems to be a degrading in political will for disaster risk management lower down the government hierarchy.

In fact all three aspects of the 'governance landscape' highlighted above are highly entwined and mutually influential. In Indonesia for example, Djalante et al. [24] suggest that a key impediment to implementing the HFA is a lack of commitment from government to mainstream DRR into broader development agendas. There, the resilience building agenda has been driven by the participation of non-government stakeholders. This suggests that there is a fundamental lack of political will within government but that the broader stakeholder context and relations of power have enabled some resilience building still to take place.

Our threefold analysis of risk governance landscape is rooted in a body of theory that has shaped development studies and disaster studies over the past decades. At the centre is a focus on power in its many forms – political, economic and cultural – and the way that stakeholders with various amounts of power interact with each other and, in turn, how these interactions influence vulnerability and capability in relation to managing risk [105]. We

already mentioned political economy. In a specifically environmental application, this body of theory that goes back into the 18th century [67, p. 33–44], is called political ecology [68,69]. Such understanding of power among stakeholders-in-relation-to-the-world ('world' as environment as it is socially produced as 'resource' or 'hazard' – Wisner et al. [102]: 4–10) is complemented by a survey of institutions (both formal and informal). This last mentioned is the domain of political science [45], social psychology (Slovic, [79]) and sociology, which is especially highly developed in the study of disasters [90]. Finally, a study of the motivations for disaster management action brings us back to the reality of material incentives, hence to political economy. The whole of our discussion assumes the interplay of structure and agency – that is, macro scale drivers such as the distribution of power, wealth and income, that guide, but do not determine choices and behaviour that retain a degree of freedom [9,33].

Following a brief account of the methodology adopted for this study and an introduction to the background of the study areas, the discussion for this paper is divided into three sections. The first focuses on the 'stakeholder context' and relationships between the state and non-governmental actors such as NGOs and donors. The second considers the 'institutional context', including the legislative, regulatory and policy context of DRR, the position of institutions responsible for DRR and the relative coherence of the policy and institutional settings. The third section considers the 'incentive context' highlighted in the political economy literature such as the role of champions, the availability of resources, visibility and patronage. Each section features a comparison between Nepal and Bihar.

3. Case study areas and methodology

Located on the boundary of two converging tectonic plates, Nepal and neighbouring India are highly susceptible to earthquakes [5]. Since 1500 AD, a total of eight earthquakes larger than M_w 7.5 had been recorded across the Himalaya [4] not including the Nepal earthquake of April 2015. Key events include the 1934 Bihar–Nepal earthquake which destroyed Kathmandu, and Munger and Muzaffarpur in Bihar State, killing more than 11,000 people across Nepal and Bihar; and the 2011 Sikkim earthquake which killed more than 100 people and caused extensive damage to buildings and infrastructure in Northeast India and Eastern Nepal.

We focus our research on Nepal and the neighbouring Indian State of Bihar (Fig. 1), which have evolved very different systems of governance and state apparatus for reducing earthquake risk. While a small country and a state within a large country may seem an odd choice for comparison, there are solid grounds for the coupling. Nepal actually has a smaller population than Bihar, and is only 1.5 times the surface area. As of 1 January 2015, the population of Nepal was estimated to be 28,811,808 people (in 2011 it was 27,156,367). The total area of Nepal is 147,180 km² [97]. The total population of Bihar as per the 2011 census is 104,099,452 and the area is 94,163 km² [13]. Nepal and India are ranked 145 and 135 respectively out of 187 countries in the Human Development Index [94]. Nepal is classified as a low human development nation and India a medium development nation. However, it is important to recognise the interstate disparities in India. Based on the multi-dimensional poverty index, more than half of the population of Bihar lives below the Government of India's extremely low national poverty line [25], in comparison to 25.2% living below the national poverty line in Nepal [94].

In a number of respects, Nepal and Bihar share similar socio-economic characteristics. They are both predominantly rural, with 83% of Nepal's population residing in rural areas [14] and 89% in

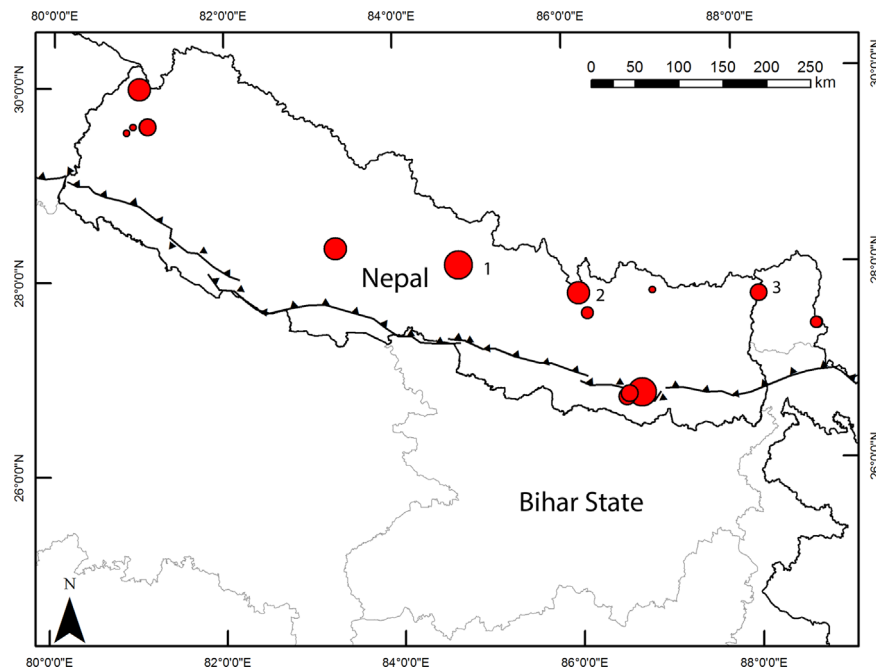


Fig. 1. Map locating Nepal and the Indian State of Bihar. The black lines outline the country boundaries; the grey lines the state boundaries in India. The map traces the main central thrust fault (source: [84]) which marks the boundary between the Indian and Eurasian tectonic plates and is considered to be the most active thrust fault in the study area. The epicentres of earthquakes greater than Mw 6.0 (1911–June 2015) are indicated by the circles (source: [98]). These events are scaled by Mw, with the three most recent earthquake epicentres identified (1=Mw 7.8, 25 April Gorkha earthquake; 2=Mw 7.3, 12 May Dolakha earthquake; and 3=Mw 6.9 Sikkim earthquake).

Bihar [93]. Services are the main contributor to GDP in both Nepal and Bihar at 55.7% and 74.07% respectively; followed by agriculture at 30.7% and 21.30% respectively; then industry, contributing a mere 13.6% in Nepal and just 4.63% in Bihar based on 2014 estimate [16,93]. Economic growth in Bihar averaged at 5.1% between 1999–2008 according to the Indian Government Central Statistics Organisation but by 2010–11 had risen to over 14% [41]. Nepal's economic growth rate by comparison is 5.5% [16] based on 2014 estimate.

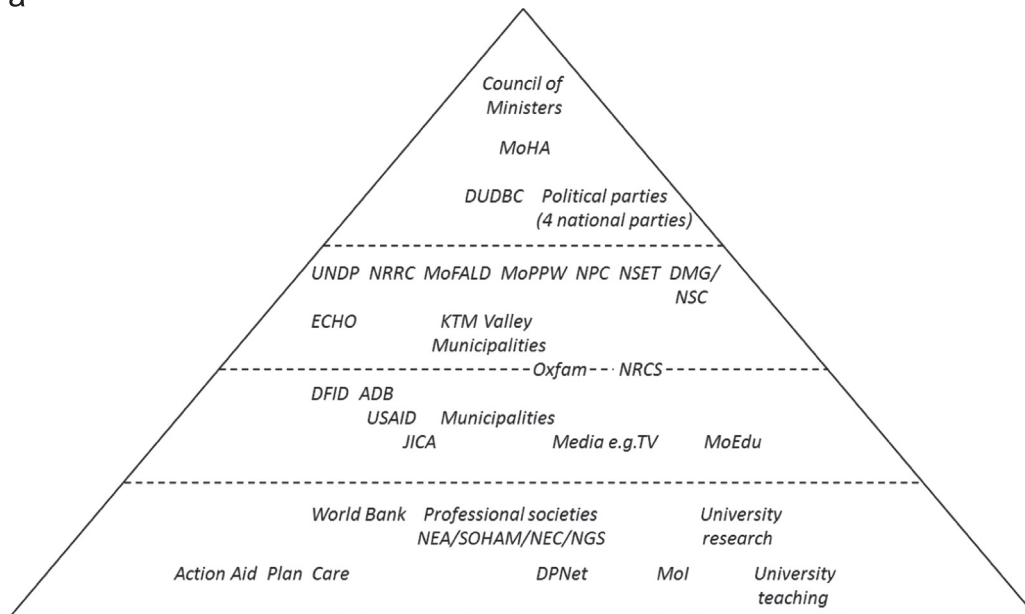
There is a notable undersupply of public goods in both Bihar and Nepal including electricity, water and healthcare with development activities concentrating largely on urban centres [73,107]. In addition, social inequality based largely on caste and ethnicity is high in both locations [10,30,54]. In common with the rest of South Asia, Nepal and Bihar have had uneven experience with democratisation and decentralisation [32]. While this and other contributory factors led to a civil conflict in Nepal (1996–2006) [73], in Bihar there has been a more low-level Naxalite insurgency [18,88]. For decades, however, Bihar was considered a lawless state known for its caste violence and corruption [60]. Thus while we acknowledge that Bihar is not representative of India and inherent differences are to be expected by comparing a federal state with a nation, the application of the framework to these different scales of governance demonstrates the versatility of the framework. It can be applied at any level of governance.

The empirical data collection was undertaken by the first two authors of this paper. In Nepal, we began with a focus group discussion involving 12 people in January 2013 with the aim of identifying the stakeholders engaged in earthquake risk reduction in Nepal and exploring the relationships among them. The focus group participants, identified through discussion with key informants, represented a range of groups and views. The group included Nepali scientists working for government institutions, senior staff from international and national NGOs all of whom were Nepali nationals, and international representatives from donor organisations and donor-funded projects. We adapted the Stakeholder Analysis approach developed by the ODI [80] to

identify the parties engaged in earthquake risk reduction in Nepal. Participants were asked to write the stakeholders on sticky notes and to arrange the stakeholders based on their level of power (i.e. the influence they have over the earthquake reduction agenda in Nepal), with the most powerful stakeholders positioned in the top tier of the pyramid, and the least powerful in the bottom tier. The activity was facilitated by the first author who explored with the participants why a particular stakeholder had been placed in a particular position, the nature of their power and their motives. The discussions and interactions between participants were recorded by the second author. A second exercise explored the connections and relationships between stakeholders. For this, the names of the stakeholders were written on different sized circles reflecting their level of power. Participants were then asked to arrange the circles to demonstrate the relationship between stakeholders. In order to unpack the focus group findings further, 26 in-depth, semi-structured interviews were undertaken in March 2013 with the stakeholders identified during the focus group, along with further discussions with key informants. The interviews also explored the institutional and legislative context for DRR, the role of different stakeholders and the factors that enable or obstruct earthquake risk reduction in Nepal. The stakeholders interviewed included representatives from international organisations, multi- and bi-lateral donor organisations, government bodies, and national and international NGOs.

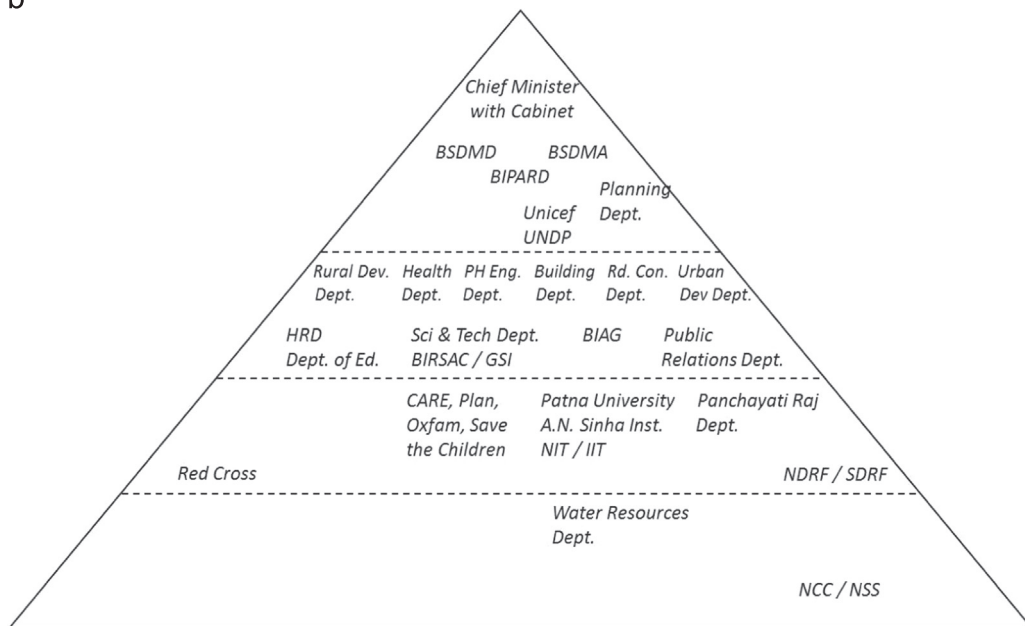
In Bihar, an initial focus group discussion involving the activities outlined above was held in January 2013 with four people who were based within the Bihar State Disaster Management Authority, two of whom were seconded to the BSDMA from UN organisations as part of a DRR capacity building initiative. Acutely aware of participants' subjectivity—particularly given that all participants were linked to the BSDMA—a focus group discussion was also held with 15 representatives from local and international NGOs with the aim of exploring further the role of government and non-government stakeholders in DRR in Bihar. The findings corroborated those of the government group. In addition to the focus group discussions, 19 in-depth, semi-structured interviews

a



Key: MoHA (Ministry of Home Affairs), DUDBC (Department of Urban Development and Building Construction), NRRC (Nepal Risk Reduction Consortium), MoFALD (Ministry of Federal Affairs and Local Development), MoPPW (Ministry of Physical Planning and Works), NPC (National Planning Commission), NSET (National Society for Earthquake Technology), DMG (Department of Mines and Geology), NSC (National Seismological Centre), ECHO (European Humanitarian Aid and Civil Protection), NRCS (Nepal Red Cross Society), DFID (UK Department for International Development), ADB (Asian Development Bank), JICA (Japanese International Cooperation Agency), MoEdu (Ministry of Education), DPNet (Disaster Preparedness Network), Mol (Ministry of Irrigation).

b



Key: BSDMD (Bihar State Disaster Management Department), BSDMA (Bihar State Disaster Management Authority), BIPARD (Bihar Institute of Public Administration and Rural Development), PH Eng. Dept. (Public Health Engineering Department), Rd. Con. Dept. (Road Construction Department), HRD (Human Resources Department), Dept. of Ed. (Department of Education), BIRSA/GSI (Bihar Remote Sensing Application Centre), GSI (Geological Survey of India), BIAG (Bihar Inter Agency Group), NIT (National Institute of Technology), IIT (Indian Institute of Technology), NDRF (National Disaster Response Force), SDRF (State Disaster Response Force), NCC (National Cadet Corps) and NSS (National Service Scheme).

Fig. 2. Power and influence pyramids created for Nepal (2a) and Bihar (2b). The more powerful/ influential the stakeholder was perceived to be in relation to earthquake risk reduction, the closer they were positioned to the apex of the pyramid. The question was asked “Who or what organisations are most powerful and influential in earthquake risk reduction?” (The question itself generated some debate among participants as they acknowledged a distinction between implementation (‘doing’ earthquake risk reduction), policy and funding (‘enabling’ earthquake risk reduction). It was decided that the latter were more important and as such stakeholders enabling earthquake risk reduction appeared higher in the pyramid).

were undertaken in Bihar in September 2013 with a similar range of stakeholder groups as Nepal and following the same methodological approach.

The interviews were recorded and transcribed, with detailed notes taken during the focus group discussions by the first and second authors. The transcripts and notes were analysed thematically and coded based on the key themes of interest summarised above. In a small number of cases, direct quotes from transcripts have been very lightly edited without altering their meaning in order to make it easier for the reader to grasp quickly the points being made by non-native English speakers. A review of the policy literature and numerous informal conversations also informed the research in both locations.

4. Understanding the governance landscape for earthquake risk reduction

4.1. The stakeholder context of DRR in Nepal and Bihar

This section explores the role and power of the state vis-à-vis non-state actors. The stakeholder mapping process undertaken with a range of representatives from different stakeholder groups in both countries revealed who was perceived by focus group members to be driving the agenda for earthquake risk reduction and who had power to steer the process (Fig. 2a and b). In Nepal the exercise generated considerable discussion and disagreement among participants about which stakeholders had most power and influence and should therefore appear at the top of the pyramid. It took about half an hour and circular and convoluted discussions to finally reach an agreement. In Bihar, this process was undertaken very rapidly with consensus among the group. The resultant 'power/ influence' pyramids were, however, similar.

Government bodies were in the top tier. In Nepal, the Council of Ministers was positioned at the top followed by the Ministry of Home Affairs (MoHA) in which the Disaster Management Section is located, followed by the Department of Urban Development and Building Construction (DUDBC), the department responsible for building code implementation. In Bihar, the Chief Minister and his Cabinet were positioned at the top followed by key government departments including the Bihar State Disaster Management Department (BSDMD) and Bihar State Disaster Management Authority (BSDMA).

In both pyramids, the second tier was occupied by UN organisations and other central level government departments. In Nepal this included the Nepal Risk Reduction Consortium (NRRRC), which includes the Government of Nepal, multi- and bi-lateral donors, and humanitarian and development partners working collectively for DRR; and a prominent national NGO working for earthquake safety (the National Society for Earthquake Technology, NSET-Nepal). In Nepal, the Kathmandu Valley municipalities were inserted below reflecting the power of the municipal governments in the Kathmandu Valley which is seen to dominate the country. A third tier included INGOs in Bihar and Nepal and, in Nepal only, multi- and bi-lateral donors and development banks. A slightly different picture emerged however, through the in-depth interviews. The discussion below elaborates on these findings.

It is clear that the influence of international organizations in Nepal is very significant and that the donor community plays a large role in advancing the DRR agenda, especially earthquake risk reduction. As the director of a national NGO explained: *"Nowadays what I see is that, at least the major donors have included disaster risk management agenda into their development strategy and since Nepal's economy depends on their development agenda, so they could be said to be drivers – not our government – our government has nothing to do with this"*. The extent to which the agenda for

earthquake risk reduction in particular is externally driven is reflected in a comment made by a representative from a bi-lateral donor: *"We need to engage the government more, and to be fair to them they have engaged, there are times when they're looking at us thinking 'why are these foreigners so obsessed with earthquakes'-really? But ... from their part they do recognise that we don't have ulterior motives here-we're not trying to take over"*.

The UNDP has had a long presence in Nepal and has been providing support to reduce the impact of disasters since the early 1990s. It has been instrumental in establishing the NRRRC. Structured around five priority areas or flagships², the NRRRC represents *"an unprecedented international alignment of donors – all working to a common plan with a shared sense of urgency and ambition"* [70]. Coordination among international organisations working in the same country is a well-known challenge [2] and as one independent consultant in Nepal explained: *"different organisations are responsible for different things and there's never any coordination between them. There's always a very disjointed approach and there's a reluctance to ever come together"*. The NRRRC has provided a mechanism through which to address these coordination challenges and progress has certainly been made [83].

According to Panday [66] more than 60% of Nepal's development budget comes from bilateral and multilateral donors (40% being state generated), of which 70% goes through the Finance Ministry (i.e. to government). The rest goes through the Social Welfare Council to NGOs and civil society groups. NGOs in Nepal are particularly important for the implementation of DRR projects reflecting the limited capacity of government at the local level. As a representative from a bilateral donor organisation explained, *"We were trying to be absolutely transparent and say to the government, look, [as] there is no government system to fund through, we're going to fund a whole bunch of NGOs and the UN and the....Red Cross....to help bring capacity to this county to help you to save more lives"*. This view was shared by a representative of an international NGO: *"NGOs are there because the government is not doing so. If the government's perfect there is no need of NGOs"*.

There is a particularly strong national NGO for earthquake risk reduction in Nepal called the National Society for Earthquake Technology (NSET-Nepal) which, founded in 1993, is a well-established and highly respected organisation. NSET-Nepal is engaged in earthquake risk reduction activities including the retrofitting of hospitals and schools, the training of masons in earthquake safe construction, earthquake sensitization and awareness raising and community based hazard mapping and vulnerability/capacity assessment. NSET executes projects funded by, for example, USAID, UNICEF, the American Red Cross Society and the Nepal Red Cross Society, and it is affiliated with a number of regional and international networks. Viewed as a knowledge intermediary, NSET-Nepal is the go-to organisation for information about earthquake hazard and seismic safety. As a representative from an international NGO explained: *"Most of the people rely on the brochures, maps, the data and information produced by NSET.... the flag of USAID and NSET that we see on everything"*. This reflects NSET-Nepal's relatively high position in the 'power/influence' pyramid (Fig. 2a).

Much of the donor money for DRR is channelled to international NGOs for distribution to local NGOs for local level project implementation. Local NGOs vary considerably in quality and do not always have a good reputation. One international consultant remarked that while international NGOs tend to appoint good

² The five flagship areas of the Nepal Risk Reduction Consortium are: Flagship 1 – School and Hospital Safety; Flagship 2 – Emergency Preparedness and Response; Flagship 3 – Flood Risk Management; Flagship 4 – Community Based Disaster Risk Management; and Flagship 5 – Policy/Institutional Strengthening (see: <http://www.un.org.np/coordinationmechanism/nrrc>).

managers and reward competence, local NGOs are set up by people who have money and are well connected but may lack capacities to manage. The interviewee went on to explain that “there are zillions of NGOs in this country – its kind of an entrepreneurial thing”. NGOs are especially vulnerable to corruption as they are accountable to no one (except possibly their donors) and they do not come under the purview of anti-corruption agencies like the Commission for the Integration of the Abuse of Authority (CIAA) [58] although efforts to change this are being set in motion.

By contrast, in Bihar State, government leadership in earthquake risk reduction is much stronger, and donors and multilateral agencies currently play a less important role in shaping the agenda.³ As India is wealthier than Nepal and now defined by the World Bank as a middle income country, the involvement of NGOs may be expected to be less.⁴ This may have been compounded in Bihar though by the fact that it has a history of ethnic-based conflict, lawlessness and corruption (which was cited by an international NGO representative as a reason for the historically low prevalence of international NGOs and donors in Bihar as they prefer to work in “poor but well governed states”). Disaster management was not a particular concern for the then Chief Minister, Lalu Prasad Yadav (1990–1997), who is reported to have said after the 2004 floods (one of the worst floods to have occurred in Bihar that decade) that relief was not needed as flood affected people could “eat fish from the floodwaters” (NGO representative). The current Chief Minister, Nitish Kumar, has been much more sympathetic to DRR and welcomed initiatives of multilateral agencies. He has a strong reputation for addressing the development challenges of the state, strengthening state institutions and improving governance [15].

The UNDP has a mandate for advocacy and policy support to the government and has previously played a valuable role in promoting DRR in Bihar. A UN representative in Bihar explained: “definitely international organisations have been able to set the agenda for DRR,” highlighting numerous UNDP/Bihar government initiatives: promoting the establishment of Emergency Operating Centres at the state and district levels,⁵ developing Standard Operating Procedures for DRR⁶ and aiding the Bihar State government with expertise such as funding consultant positions within the BSDMA to strengthen capacity. However, the UNDP no longer has a presence in Bihar. As noted by a former UNDP employee “now the institution [BSDMA] has been set up and government is doing a lot of work – government is taking care of it now – so why UNDP is needed?” UNICEF, however, continues to be engaged in community-based DRR in Bihar State.

NGOs in Bihar are implementers of DRR initiatives on the ground, filling a gap where government capacity is weak. They also monitor government. In terms of recovery and relief, a representative from a government department, commenting on the recent flood disasters affecting the state, explained that “INGOs and NGOs did wonderful things in 2004 and 2008 because the state was not actually prepared ... but when the state government now is trying to take initiative, their role is an auxiliary role. They are

supporting the....state government.” But in terms of the implementation and delivery of local level DRR initiatives and awareness-raising, another government official asked “Who will do it [implement DRR projects]? Because the officials cannot always go to the field so the gap has to be filled with the help of the NGOs, CBOs [community based organisations] or those people who are really working in those fields”. As a representative from the BSDMA explained, “They [NGOs] are the initiators in some way when the government does not play the role seriously”. NGOs were variously described as ‘moderators’, ‘advocates’ and ‘checks on government’. However, as reported for Nepal, smaller local NGOs vary in their expertise and capacity with some operating like family businesses (NGOs are also sometimes passed through dowries as though a family asset). International level NGOs, by comparison, generally have a better reputation.

4.2. The institutional context of DRR in Nepal and Bihar

In Nepal, the current legislation for disaster management is still very relief-focused and dates back to 1982 (The Natural Disaster Relief/Calamities Act). Although a new Act was drafted in 2006 (with support from Oxfam), its ratification was not a priority for the present or former Constituent Assembly [50]. As noted above, the primary responsibility for disaster management in government falls to the Disaster Management Section within the MoHA. As MoHA commands the police and the armed police, and has some influence over the deployment of the army⁷, it is appropriate to locate a section responsible for relief and rescue within the MoHA, but in a post-Hyogo context with an emphasis on disaster risk reduction (prevention and mitigation), a position within a development ministry (i.e. the Ministry of Federal Affairs and Local Development) may have enabled more progress to be made in DRR planning and implementation throughout the country. Furthermore, the Disaster Management Section in MoHA has a small number of staff reflecting its low priority within government.⁸ As one UN representative noted, the greatest governance challenge is the difficulty in capacity building within the MoHA as civil servants are generalists so it takes time to build up their expertise and then they move on within a couple of years.

In the absence of a revised Disaster Management Act with a focus on preparedness and risk reduction, most stakeholders within Nepal are working to the National Strategy for Disaster Risk Management (here after ‘the National Strategy’), which was the outcome of a multi-stakeholder process, modified and approved by the government in 2009. Described by a multilateral agency representative as “the holy book that we are all working towards”, the National Strategy proposed the creation of a separate National Disaster Management Authority, under the Prime Minister’s Office, which would have the authority to mainstream DRR across all ministries and to allocate funds. There has been some resistance to this notion within the Ministry of Home Affairs, as potentially they would lose some power to a new authority (and associated resources channelled via donors). Instead, they are proposing a new (larger) division within MoHA with its own Joint Secretary.⁹

³ This is partly because certain organisations may engage to a greater extent at the national level, although their programmes do filter down to the state level (particularly donor programmes) in poorer states.

⁴ For example, following a review of its donor multilateral and bilateral aid programmes, in November 2012 it was announced that Britain would end its aid to India in 2015 [91].

⁵ These are being promoted by the UN in all 38 Districts, and two are proposed for Patna, but presently there is only one EOC in Patna.

⁶ SOPs “fix the activities and responsibilities for conducting that activity”, specifying who will do what so that activities are “more or less mandatory” (government representative). One SOP has been developed for flooding and one is being developed for earthquakes with the support of an external consultant.

⁷ The Nepal Police and Armed Police Force are Departments within MoHA; while the Ministry of Defence organises and controls the army. The Home Minister sits on the National Defence Council (with the Prime Minister, Defence Minister and three others government representatives). Upon the Council’s recommendation, the President mobilises the army.

⁸ The number at the time of interviewing was reported to be 15 members of staff (some of whom may have responsibilities in other sections as well).

⁹ At present the Disaster Management Section is headed by an undersecretary who reports to a joint secretary. There are four joint secretaries in the Ministry of Home Affairs, each of who may have 450 undersecretaries reporting to them. The new division with its own joint secretary would elevate the status of disaster management within the ministry. One representative from the Home Ministry

However, a division such as this within a ministry would not have authority over other ministries to enable DRR mainstreaming.

At the District level, government officials were keen to point out that 'as the Act has not yet been passed' they still have 'Relief Committees' rather than 'District Disaster Management Authorities' as the National Strategy advocates. This suggests some resistance to preparedness-focused activity or perhaps recognition that without the Act there are not the resources to support DRR at the district level. Indeed, according to Nepal's progress report on the implementation of the HFA (2009–11), 67 out of 75 districts prepared disaster preparedness plans in 2009, with support from international agencies [63]. However, without the necessary budgetary allocation, it has been difficult to turn these plans into action.

In India, at the Central level, the Disaster Management Act was passed in 2005 and a national body was created (National Disaster Management Authority). The Prime Minister heads the NDMA signifying the importance being given in the constitution to the issue of disasters [19]. With its federal system of governance, specific roles exist for state and central government. The NDMA has responsibility for laying down the plans, policies and guidelines for disaster management and the states are meant to devise policies and plans in accordance with the guidelines laid down by the NDMA [19]. At the state level, flexibility exists in terms of institutional arrangements. More disaster prone states have created their own Disaster Management Departments while others have smaller Disaster Management Authorities that sit within a Department of Revenue.

In Bihar, a separate Disaster Management Department (BSDMD) has existed since 2004 (as Bihar has regular floods) and was formed out of a similar institution that had existed since 1978 as part of the Department of Revenue. In addition, falling under the BSDMD is the Bihar State Disaster Management Authority (BSDMA), which was created in 2007. While the Department carries more responsibility for response, relief and mitigation, the Authority takes more responsibility for risk reduction. This has translated to an emphasis on floods within the BSDMD and an emphasis on earthquakes in the BSDMA. In addition, the Authority is responsible for producing DRR 'guidelines' which the Department translates into 'Standard Operating Procedures' (essentially the Authority provides the expertise while the Department is the regulatory body).

Although the Authority sits under the Department, it is in a strong position because it is officially headed by the Chief Minister (as specified in the 2005 Disaster Management Act) who can instruct other departments (Health, Education etc.) to bring into effect DRR mainstreaming. Furthermore, there is a regulation that all department ministers should attend BSDMA meetings. One member of the Authority informed us that *"Bihar is the only state where our honourable Chief Minister...has categorically said that every minister will attend, so that every decision that is taken in the meeting is not something that is unknown to them. So this is quite a new phenomenon....He has also defined that any idea conceived and formulated by BSDMA, if approved, will have to be implemented by every respective department"*. A member of the BSDMA interpreted this as sending out the message that *"the highest of importance needs to be accorded....to this subject [DRR]"*.

The BSDMA is considered to be one of the more progressive state disaster management authorities in India. As one member explained, *"it was a matter of pride for us when we had meetings with other states"*. The BSDMA takes proposals gleaned from the

National Act to Bihar's Cabinet for consideration. The BSDMA also developed the state level Disaster Management Plan to guide DRR activities. The Authority has secured its own 'mitigation budget' from central state funding enabling some independence from political influence. This funding also enables the BSDMA to work with and fund NGOs to implement projects such as awareness raising initiatives.

However, according to a representative from a multi-lateral agency, a key governance challenge for DRR in Bihar State is sustaining the impetus for DRR once external agencies have withdrawn. For example, while international organisations can 'push' agendas forward, and place consultants in strategic positions within government, unless the state government is willing to continue to fund these positions after projects and programmes have ended, the benefits are short-lived.¹⁰ UN-funded posts can be arranged more rapidly than government-funded positions and do not depend on political influence, so departments tend to rely on these professionals. As a UN representative explained, *"actually what happens is that Government of India systems involve very slow, systematic long term processes, so what happens is that they [government departments] try to avoid those processes. They take too long"*¹¹. A related problem is the extreme understaffing of government departments. For example, within the Disaster Management Authority there should be nine sectoral experts but none had been appointed. There has been approval for a total of 49 staff but the number currently serving in the department is much smaller.¹²

As in Nepal, it is a challenge to drive policy guidelines down undiluted to the lower levels of the political chain. A number of people, for example, commented on the (district) disaster management plans.¹³ One UN representative noted that these plans do not include any measures for earthquake risk reduction, even in the most earthquake prone districts within the state: *"you will not find....a single officer in the district who has any knowledge of earthquake risk reduction"*. The disaster management plans are a kind of document that gets 'compiled' as a 'ritual' but *"it does not have an actionable plan component which will make it useable for the purpose of enforcing accountability-so if something doesn't happen, you'll not be able to put your finger on a particular person or agency as being responsible for it"* (NGO representative). Another interviewee noted that the district disaster management plan *"is a very crucial document but what we find is that it has become a shelf document. The document is just prepared religiously because government says that you need to have it, so they are simply preparing it and putting it on the shelf. There is no use of them."*

Building code implementation and land use planning are key to effective earthquake risk reduction. In Nepal, this responsibility falls to the Department of Urban Development and Building

¹⁰ Of the 14 districts that had been involved in a UNDP programme creating district disaster preparedness plans only half had accommodated project staff into local government upon the withdrawal of external funding. These positions held by experts can be critical as district staff so frequently transfer office.

¹¹ The reason for this was explained in an informal conversation with government staff. The government have very rigorous transparency processes in place to prevent nepotism and patronage from playing out when appointments are made, but this does not prevent favours being called in. If an accusation of wrongdoing is made, the person making the appointment can be imprisoned and cases take an exceptionally long time to resolve. It is a large risk to those responsible for making appointments.

¹² The Patna Municipal Corporation, responsible for building code implementation, is 96% understaffed (according to provision stipulated proportional to population size in relevant legislation) and 180 technical posts have been sanctioned but only 10% have been filled. It was noted by a representative of a municipal corporation that there are not enough engineers to check the plans or to make site visits. Over 6000 high rise buildings have been passed and only about 30% have been properly signed off (PMC employee).

¹³ In 2006 the NDMA issued guidelines for DDMPs and UNDP supported their development in the 14 districts in which they worked. Other NGOs are currently supporting the remaining districts in the production of DDMPs.

(footnote continued)

explained that ultimately the aim would be to create a separate NDMA under the Prime Minister and the Ministry of Home Affairs would be responsible only for relief and response.

Construction (DUDBC) (within the Ministry of Urban Development) for private buildings over seven storeys and all government buildings (except schools which are the responsibility of the Ministry of Education and the private sector; some hospitals which are the responsibility of the Ministry of Health and the private sector; and local government buildings which fall under the Ministry of Federal Affairs and Local Development, MoFALD). This is an awkward situation because effective building code implementation would require this department to preside over the municipalities, but municipalities currently fall within the remit of MoFALD. This is one area where institutional incoherence is evident. With many new municipalities being declared in Nepal,¹⁴ the issue of urban planning and building code implementation is a pressing concern.

In Bihar, in theory, the Urban Development Department has the authority to ensure that building codes are adhered to. But while the department has updated the building by-law to include “*all the earthquake resistant construction technologies*”, it is “*not yet enforced*” (BSDMA representative). As suggested by a representative of an international organisation in Bihar: “*India is very good at developing policies and plans....[but] take one guideline and go to the community and it is lost.*” A strong sense emerged that some laws are not really implemented, particularly down to the local level in Bihar. As a representative from government explained, “*I think we can't just be relying on laws and implementation....you cannot leave it at that.*” Instead emphasis was placed on raising awareness, education and training. It is clear from the interviews undertaken that laws are insufficient to create change.

In urban areas, and particularly in Patna, the capital of Bihar, the problem with building code implementation is related to a lack of accountability in construction. One private construction company owner explained that there is a proposal in the state parliament for legislation that would hold both builders and engineers responsible for the failure to construct earthquake safe buildings. However, these draft laws are still to be presented to parliament. This would require the government to take action against the powerful builders' lobby in Bihar which may be the reason it has stalled.

According to Abdullaheem [1] lobbies fund politicians to meet the high election costs and seek personal favours in return. Abdullaheem also explains that “[M]any state funded construction activities in India, such as road-building are dominated by the construction mafia, which are groupings of corrupt public work officials, materials suppliers, politicians and construction contractors”. He highlights shoddy construction and material substitution as two key problems which have serious implications for building earthquake safe buildings. For example, in the focus group discussion with non-state actors it was highlighted that “*even if there is a rule....even if stated, no one follows – bribing and all those things*” and “*it's about priorities – you have a cement lobby and an iron lobby, other businesses....if everyone was accountable at their point then things could change, but this is not the culture here.*” There were positive signs of change with the former Commissioner of the Patna Municipal Corporation taking action against builders and landowners constructing high rise buildings in violation of building laws in the state capital, resulting in the demolition of illegal buildings [46]. However, the commissioner in question was later suspended by the Government of Bihar for his tough stance following pressure from the ruling party [64,86,99].

4.3. Incentives context in Nepal and Bihar

Above we emphasized the influence of donors in Nepal. A high level of ‘political will’ for earthquake risk reduction certainly exists amongst the donors. The necessity for urgently implementing earthquake risk reduction measures is frequently framed by donors in terms of ‘protecting development gains’. One representative from a bi-lateral donor suggested that “*we had to work this through....the fact that landslides and floods kill more people – why should we focus on earthquakes?.... an earthquake could unpick all the development gains [achieved] in the last thirty years in forty seconds*”. The measures for earthquake risk reduction that donors have favoured have included more visible actions such as retrofitting hospitals and schools, as well as less visible initiatives such as strengthening building code implementation and awareness-raising. Donors' perceived need to justify the use of taxpayers' money may be a key reason for these choices and the balance between the visible and invisible.

This level of political will among donors is not matched in government, and it could be argued that it is only present in government at all due to the ‘incentive’ provided by the availability of donor money. There is no government budget for DRR in Nepal and as noted by a government representative “*because the national government does not have lot of funds for the prevention of disaster activity....if we follow their [donor's] activity or recommendations then it is easy to get funding [for DRR]*”. At the same time, in order to avoid appearing to be a donor-driven agenda, much of the language used by donors frames DRR processes as being led, or owned, by government (e.g. “*MoHA has requested it [support with DRR] and we are supporting them in that request*” as suggested by a representative of the NRRC, and the NRRC itself being framed as a ‘government-led’ initiative). This masks the actual level of government commitment. A representative of the NRRC expressed frustration at the lack of progress made by the bureaucracy and suggested that the support provided by the NRRC would be difficult to maintain if the government could not show that they were more committed. The development of the new disaster management division within MoHA is being viewed as the government starting to take the issue more seriously.

The role of key individuals, or ‘political champions’, in driving the earthquake risk reduction agenda in Nepal, is also evident. These high level individuals represent the UN system, embassies and bilateral donor organisations. As discussed in Section 4.1, the political clout of these organisations in Nepal, reflecting their position as prominent donors, is well recognised (Jones et al. [50]). Key individuals have been seen to leverage their political capital, promoting the earthquake risk reduction agenda with the Government of Nepal and the wider development community. As one donor representative noted there had been “*some real leadership... in terms of the American ambassador [Scott DeLisi] and Robert Piper [the former Resident Coordinator of the UN in Nepal]....*” Robert Piper highlighted the urgent need for earthquake risk reduction in Nepal at a high level UN meeting in 2012 [61] and was instrumental in establishing the NRRC and its five flagship programmes designed to reduce disaster risk in Nepal. The significance a few years ago, of DeLisi was also highlighted by a director of an international NGO “*it [earthquake risk reduction] became like resilience is today only better – it was really a hot topic – and part of it was the American Ambassador was very keen....definitely all of a sudden there was an explosion of attention....they organised a big workshop....there was like a peak of interest – you could say it started in the beginning of 2011.*” Recognising the governance challenge in post-conflict Nepal, DeLisi used his position to get earthquake on the agenda of the Government at the highest possible level; leveraged funding from government, donors and the private sector; and established an inter-agency DRR office which

¹⁴ In May 2014, the Government of Nepal declared a further 72 municipalities across 19 districts, increasing the total number to 130 [38].

was led by USAID [29].

A further key figure in putting earthquake risk reduction more firmly on the agenda in Nepal around the same time was the former UK Minister of State for International Development, Alan Duncan. The UK's interest in DRR and resilience building can be traced back to the Humanitarian Emergency Response Review which argued that resilience should be at the heart of DFID's approach to development [37]. In addition, Nepal was identified as a priority country for UK Aid in the Bilateral Aid Review [21]. This led to DFID becoming one of the main bilateral donors funding DRR in Nepal, with the earthquake agenda being pushed in particular by Duncan following a visit to Nepal in 2011. The potential to build on centuries of British–Nepal relations and to work to prevent another Haiti-scale event, was appealing politically.

Key national champions of earthquake risk reduction include the Executive Director of the national NGO, NSET-Nepal, Dr. Amod Mani Dixit. Dixit works with, but also lobbies, the Government of Nepal. He has prioritised earthquake risk reduction at a time when the Government of Nepal has not, building Nepal's earthquake risk reduction capacity. Dixit's commitment to earthquake risk reduction in Nepal resulted in him receiving a national award in 2013 from the President of Nepal for services to the Nation in the field of Disaster Risk Management. Unlike representatives from the international community who are in post for relatively short periods, Dixit and his organisation have been championing earthquake risk reduction in Nepal for more than three decades. They see members of the international development community come and go with new ideas and ways of working. As a representative of a national NGO explained: *"The international community...they come here for five years max....five years is long period but too short a period for disaster management and everybody wants to get something done to their credits."* While the motivations of the international and national political champions identified here are arguably very different, they have all successfully motivated others and generated political will around earthquake risk reduction in Nepal. For a representative from the NRRC, the role played by ambassadors and heads of missions is key. However, this remains a challenge: *"if they [ambassadors/heads of missions] have two or three advocacy points to government, this [earthquake risk reduction] very often isn't in those two or three advocacy points. Either because we haven't been able to convince them that this underpins so much of their other work, or we haven't been able to convince them of the importance of this, or we haven't been able to get the humanitarian implications of this across to them strongly enough so that they feel that they can put their reputations at risk by talking about this."* (Representative of the NRRC).

In Bihar, as noted earlier, donor funding is much less significant and therefore key players in driving the DRR agenda are not from external agencies, and neither are the key leaders from within government motivated by the attraction of donor funding. It was repeated by many interviewees that financial resources are not a key constraint at the state level. It was suggested that the Bihar State Disaster Management Authority makes recommendations (for projects/spending) to the Chief Minister and they get approved. One interviewee who had been in a key position in the State Disaster Management Department, for example, noted that *"there is no dearth of funds as such, so donors are not at all required"*. Similarly, a representative from the BSDMA said *"economically we are very strong, now we have the money to fund anything – any project. Money is not at all a constraint now."* However, it was suggested by a UN representative that only half of the BSDMA's allocated budget was spent last year. This is a well-recognised problem in Bihar and other states in India, with large amounts of central state funding going unspent due to a lack of administrative capacity [18,60].

Nevertheless, it appears that political champions have been

equally important in Bihar. One representative from an international organisation stated that *"the right people are in the right place at the right time"* to really make a difference in terms of earthquake risk reduction. These people include the Chief Minister (Nitish Kumar), who was the Head of the Agricultural Ministry in the 1990s (which was then home for Disaster Management in Central Government). As a representative from the State Disaster Management Authority explained: *"so fortunately he [the Chief Minister] has got a deep appreciation and a serious concern about this whole subject so that is why he is very, very keen that we promote this whole business of safety and culture of prevention."* The Vice-Chairman of the Authority said: *"This is about creating an environment....that has been possible entirely due to the leadership of the Chief Minister. He is the elected chief of the state, he's the guiding force, he's the mentor, he's the leader and he happens to be the chairman of our Authority, statutory by law itself"*. On a more cautious and critical note, a consultant who had worked in DRR in Bihar State, suggested that the *"Chief Minister is very much clear on the earthquake issue – but [the] Chief Minister alone cannot take all the decisions"*. Indeed it is clear that capacity and political will has to exist at all levels to sustain impetus for earthquake risk reduction.

Others with relevant expertise have been appointed to key positions within government to create this 'enabling environment' for earthquake risk reduction. The Vice-Chairman of the BSDMA, Anil Sinha, is highly regarded and respected and has worked both as a District Magistrate and in disaster management at the national level as the member secretary of the High Powered Committee in the late 1990s (arising from the International Decade of Natural Disaster Reduction). Under Sinha's leadership, the BSDMA has established the State Disaster Management Policy and Plan, coordinated earthquake awareness raising initiatives and provided training for masons in earthquake safe construction practices. Also within the Authority as a retired honorary member is Professor Arya, who is a 'world renowned seismic engineer' and a National Advisor to the Ministry of Home Affairs/UNDP Earthquake Vulnerability Reduction Programme. Dr Bala Prasad, Former Director General of the Bihar Institute of Public Administration and Rural Development (BIPARD), is another champion is also highly aligned with the DRR agenda. His doctoral research compared disaster management approaches across four states in India. BIPARD provides training for state administrative officials (at the district, block and panchayat levels).¹⁵ Finally, Mr D Sah, a seismic engineering expert, directs the Police Building Construction Corporation (a state body responsible for the construction of all police buildings). Under Sah's leadership the corporation is leading the way in earthquake safe construction of state buildings. Mr. Sah has called on the government to follow its own building code despite entailing an 8–10% increase in construction costs. Such pressure has led to the requirement that all new government buildings comply with the building code (BSDMA representative).

While leadership in earthquake risk reduction is strong in Bihar, the broader political will behind earthquake risk reduction is less clear, particularly given the state's susceptibility to flooding, a reality that has the potential for diverting politicians' attention. Members of the BSDMA are aware of the importance of political will in driving the earthquake risk reduction agenda. They are therefore raising awareness of seismic risk across government departments and political parties (as well as the general population).¹⁶ When asked about retrofitting and securing lifeline

¹⁵ Following a UNDP project to engage in community based disaster preparedness across 14 of the 38 states, the state institute was trained to provide training across rest of the state.

¹⁶ As one former BSDMA employee explained *"So first one is need of political will – so Authority needs to motivate and sensitise them on the disaster scenario- how*

structures, interviewees in government tended to answer by suggesting that awareness needed to be raised first, the rationale being that through awareness-raising comes demand for earthquake safety.¹⁷

During the focus group discussion with non-state actors, this was looked upon somewhat cynically, suggesting that training programmes are run by the government to “protect themselves so that when asked ‘what do you do’ [they can say] I have been giving training to the people and everything like that – rather than actual intention of protecting these [the population]”. It was also suggested by a representative of an international organisation that awareness-raising was something of a smokescreen for inadequacies in engaging in more structural measures: “So the question of political will...retrofitting guidelines are being produced etc. [but] are these being adhered to? Can you show any building that has been retrofitted? Can you see any building being constructed adhering to these norms? That is the question mark. I don’t think it is just a matter of time, unless and until they change their approach to concrete action on the ground”.

Skepticism, or at least caution, has also been expressed concerning the role of champions. Williams [101, p. 33] concludes a review of many case studies as follows: “In many countries, particular individuals have played a decisive role in promoting DRR reforms and institution building. The existence of these ‘champions’ provides a more favourable environment for obtaining international support, but their influence may not be permanent. There is a risk of placing too much optimism in the potential of individuals to bring about change, while downplaying the role of more systemic constraints.”

Due to the nature of earthquake risk reduction measures as public goods, it is virtually impossible to confine their benefits to an allied group supporting a particular political party (in the way that disaster relief can be) so there is little scope for political will to arise out of the potential to win political support through patronage as Williams [101] suggests. Earthquake risk reduction, it was pointed out by one state employee, including even the most visible measures such as retrofitting hospitals and schools, “does not win votes”. He noted that “as far as people are concerned, they will hardly vote for preparedness which the government shows in respect of earthquakes—that is not a very important thing with the public. They will appreciate it if something is done that is in the larger interests of the society and if and when it happens.”

It is well recognized that disaster events can provide a window of opportunity for change (see, for example, [77], [6]. Unlike other countries in South Asia, disasters of the scale of the 2015 earthquakes are rare in Nepal and this has had an impact on the (lack of) action taken to reduce disaster risk, both in terms of the

political impetus for action and in terms of the funding available for action. As a representative from the NRRC explained: “Compare it with Bangladesh. Bangladesh has a major emergency every 2, 3, 4 years and has done for the last few decades which has meant it’s at the forefront of communities’ minds, it’s at the forefront of policy makers’ minds. People will hold politicians and bureaucrats accountable because everyone knows the next crisis will come...[Bangladesh has received humanitarian assistance and] it’s been humanitarian money that’s been used to support DRR [in country]. Now we haven’t had that here [in Nepal]...Also, even in Bangladesh...it’s probably taken 12–15 years to get legislation through, to get the NDMA [National Disaster Management Authority] created, to ensure there is some kind of linkage between the national and the local DMAs [Disaster Management Authorities]. In India it was after Gujarat that the NDMA got created, in Pakistan it was after the Kashmir earthquake...in Indonesia, in Sri Lanka and Maldives it was after the tsunami...We haven’t had the triggers [disaster events]...[or the] humanitarian funding which could be used to set everything up, both as an incentive and as some kind of future accountability mechanism”.

The 2011 Sikkim earthquake affected 23,425 families across 18 districts in Nepal, killing seven people and injuring 88 [40]. Described as a “wake up call for Nepal” [22], [42], the earthquake was found to have little impact on DRR policy and practice in Nepal. The main reasons cited by respondents were that the earthquake was not high impact enough; that it did not cause serious damage in the Kathmandu Valley which is where government concerns mainly lie; that the Government of Nepal’s response was considered effective, indicating that they could therefore manage in the event of a high magnitude earthquake. As an interviewee from a multilateral agency explained: “If a politician is hit by a disaster that is what [helps] the agenda. In the case of [the] 1988 [earthquake] it was the eastern region that was hit. The ruling party, the Prime Minister, the Minister of Home Affairs came from that very place...If they did not act on it they would lose the votes...It [the 2011 Sikkim earthquake] didn’t get the same momentum...it [happened] at the most ideal time that it could happen. It didn’t shake the entire country, it was limited geographically to the eastern part, also in the hills not the plains, not where the densest of the settlements are. God gave a gentle slap on the hand. Politicians could have taken that as a major turning point [reducing future risk]...but this was not a normal time, it was just after a conflict, there was not a stable government back then”.

Other significant recent events include the 2008 Kosi flood disaster which affected three million people in Bihar, with approximately 3000 lives lost [78]. This was the eighth breach of the Kosi embankment which Mishra [62] attributes to “official apathy towards the embankments of the Kosi”. Indeed according to Mishra [62], “virtually no ruling party can claim (including the administration under president’s rule) that it was not involved in such an incident”. Focusing on the institutional causes of the 2008 flood disaster, Shrestha et al. [75] summarize these as “lack of local awareness and disaster preparedness, lack of anticipation and prioritization given to the possibility of an embankment breach, lack of monitoring and maintenance of the embankments, the hierarchical communication mechanism, and the exclusive and complex nature of the institutional design for dealing with the Kosi”. With flood management the responsibility of state governments in India, the 2008 flood has been described as a ‘focusing event’ from the perspective of the Bihar State government resulting in an increased focus on preparedness and response with evidence of policy reform and capacity building [71].

5. Discussion and conclusion

We began by citing Wilkinson’s [100] list of DRR-related roles

(footnote continued)

earthquake ... If the state politics is more interested in the disaster management so they can do anything – state minister and concerned ministers of the departments – they can take any initiatives. Anything that is proposed unless and until it is approved by the cabinet [comprising of these ministers] it cannot move forward.” Attempts to ‘motivate’ MPs had so far not met with success “at the same time it was refused from the cabinet – no, this kind of work is not necessary right now, not much time, several other issues. So somehow a lack of interest, lack of sensitisation is there.”

¹⁷ Literature on the public support for earthquake risk reduction elsewhere is scarce. In the US, Tierney suggests that there is a “somewhat contradictory picture of the strength and scope of public support for hazard-reduction measures. On the one hand, there is a substantial body of work in the social sciences suggesting that both the general public and opinion leaders assign a low priority to earthquake and other disaster-related loss-reduction programs ... [O]n the other hand, some studies have shown that significant public support does exist for stronger seismic safety measures” [89]. Similarly, studies on the relationship between knowledge and preparedness show inconsistent findings. While a number of authors highlight the importance of awareness-raising as a pre-requisite for preparedness (e.g. [44], [85], empirical research on the relationship effect of awareness campaigns/knowledge on preparedness behaviour suggest only small improvements (e.g. [82], [51] or none at all (e.g. [74], [47], [3].

for government. We remind the reader of them as follows:

- provision of disaster risk reduction goods and services
- avoidance of the creation of risk in its own construction and other activities
- regulation of private sector activity.
- promotion of collective action
- coordination of multi-stakeholder activities.

In the neo-liberal context of ‘rolling back’ the state, it may be expected that these five roles will become increasingly difficult to meet. In the context of India, the neo-liberal agenda seems to have created a particular challenge for the state as a ‘*regulator of private activity*’ as the power of the construction lobby is a key challenge. In Bihar, it seems that financial resources are being made available for certain state roles to be met (such as the budget that the BSDMA has secured) and these financial resources are safeguarded against changes in government, generating a potentially stable and sustainable context for DRR and earthquake resilience building to take place. Some *provision of goods and services* is being made, particularly in terms of awareness-raising and building safer infrastructure (*avoidance of the creation of risk in its own construction*). The state also seems to be playing the role of *promoter of collective action* through awareness-raising. The BSDMA is in a good position institutionally to *coordinate multi-stakeholder activity* given the position of the Chief Minister as its head and the requirement of all ministers to attend key meetings. The impetus for DRR comes from within the state and the directives from the National Disaster Management Authority. Once something is approved through the BSDMA, it can be relatively easily rolled out across the whole state (e.g. earthquake safety in schools). Particular challenges include the translation of policy into practice but the strong state-led political context in which disaster risk reduction takes place suggests a promising future.

In comparison, these five roles for the state in post-conflict Nepal are mostly being adopted by external institutions. A low level of political will to build earthquake resilience seems to exist within the state and that which does exist seems to be conjured forth by the attraction of donor funding. This situation may be exacerbated by the fact that the cost of recovery and reconstruction (at least in terms of large scale disasters such as the Gorkha earthquake) are partially met by the international community. The lack of government engagement is reflected in the situation that as yet, the institutional architecture for DRR does not generate any authority to enable mainstreaming across departments. In terms of *coordination roles*, the NRRC has been established in part to support this function.

Some of the key work around *risk avoidance* and the *provision of public goods* is being accomplished by key NGOs such as NSET. In terms of *regulating private activity*, most construction still takes place at a household level, so private sector lobbies against building codes are not strong in Nepal. This may well change with the construction of multi-storey apartment blocks and large commercial buildings particularly in Kathmandu. The state has demonstrated its authority in the past. In 2013, government implemented plans for road widening despite damage caused to the homes of rich and poor alike [43]. However, when it comes to building code enforcement, the responsible department (DUDBC) does not have the required level of authority and power.

In summary, while the institutional context for DRR is much less effective in Nepal than in Bihar, progress (in the minimalist definition we introduced at the beginning) has been greater in Nepal, driven largely by donors and the need to ‘protect development gains’. This is a fragile and potentially less sustainable situation. The strengthening of the state apparatus to better fulfil these five roles, is absolutely necessary for sustainable resilience

building in Nepal.

Throughout the rest of 2015 and 2016, lessons of the tragic earthquake in Nepal will be learned. These lessons will hopefully inform a process of ‘building back better’ through the governance of risk and not just the construction of buildings and infrastructure. It is essential that the in-depth forensic studies that follow focus not only on the impact of the DRR interventions of the past decade but the longer-term development programmes and their impact on human security [72].

Central to this is the issue of governance. The framework presented in this paper reflects a way of thinking about governance that may help those involved in documenting and understanding the Nepal earthquake to illuminate strengths and weaknesses of different governance systems for DRR. For example the ‘institutional context’ (the formal government structures which are supporting DRR implementation and mainstreaming for DRR) in Bihar is strong, while the ‘stakeholder context’ in Nepal enables powerful outside institutions to play a role in strengthening DRR. By disaggregating the governance landscape in this way, the specific areas that would benefit from targeted strengthening may be identified more easily.

6. Epilogue

The earthquakes on 25 April (the Gorkha Earthquake) and 12 May 2015 validate our analysis of the strengths and weaknesses of risk governance in Nepal and Bihar. The aftermath of these events already (October 2015 at this writing) have changed governance in Nepal, and these changes are bound to have a ripple effect on the structure and process of risk governance in particular. Having failed to legislate a new constitution for many years following the end of the civil war, Nepal’s parliament brought the document in June, less than six weeks after the first earthquake [48]. The new constitution came into force on 20 September. Among other things, the new constitutional order mandates a federal state composed of states, each with their own parliaments and executive branches. The pre-existing districts, villages and municipalities are to be encompassed by this additional level of state government. The demarcation of these new states-five North-South swaths of territory from the mountains on the frontier with China and two others oriented East-West in the lowland, Terai zone bordering India-has been very controversial [35]. Minority ethnic groups protested that such a spatial division would fragment them and dilute their electoral power. Protests turned violent and forty-five people have died [39].

Meanwhile, six months after the earthquake the Government of Nepal had failed to spend any of the more than USD 4 billion pledged by donors for recovery [57]), a consequence of political distraction foreseen by some [31] and acknowledged by the director of the newly formed National Recovery Authority, Govinda Raj Pokharel [57]. Our analysis demonstrated that government in Nepal is dependent upon external institutions for DRR. The Gorkha Earthquake revealed that government is also dependent on these external institutions not only for relief but for recovery. While dependence is to a degree built into the definition of ‘disaster’ as an event adequate response to which requires more than can be mobilized at local or national scale (depending on the size of the impact), self-reliance or at least leadership and coordination normally reemerge. Given the challenge of restructuring government under the new constitution and the continuing lack of consensus in the national parliament, even delaying the establishment of the National Recovery Authority [87], we have to wonder when and if DRR will become a national priority.

On the Bihar side of the border, this Indian state was not badly affected by the earthquakes in Nepal. India mobilized considerable

search and rescue and other assistance for Nepal, and consistent with our analysis, in Bihar, the State Disaster Management Authority (BSDMA) launched a study to learn lessons from Nepal of relevance to strengthening DRR at home [76].

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References

- [1] A. Abdullaheem, Corruption in India: an overview (Causes, consequences and remedial measures), *Soc. Action* 59 (2009) 351–363.
- [2] M. Arnold, International planning systems for disaster, in: B. Wisner, et al., (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012, pp. 603–616.
- [3] J.C. Audru, J.L. Vernier, B. Capdeville, J.J. Salindre, E. Mouly, Preparedness actions towards seismic risk mitigation for the general public in Martinique, French Lesser Antilles: a mid-term appraisal, *Nat. Hazards Earth Syst. Sci.* 13 (2013) 2031–2039.
- [4] R. Bilham, N. Ambraseys, Apparent Himalayan slip deficit from the summation of seismic moments for Himalayan earthquakes, 1500–2000, *Curr. Sci.* 88 (10) (2005) 1658–1663.
- [5] R. Bilham, Urban earthquake fatalities: a safer World, or worse to come? *Seism. Res. Lett.* 75 (6) (2004) 706–712.
- [6] J. Birkmann, P. Buckle, J. Jaeger, M. Pelling, N. Setiadi, M. Garschagen, N. Fernando, J. Kropp, Extreme events and disasters: a window of opportunity for change? Analysis of organizational, institutional and political changes, formal and informal responses after mega-disasters, *Nat. Hazards* 55 (2010) 637–655.
- [7] P. Blaikie, T. Cannon, I. Davis, B. Wisner, *At Risk: Natural Hazards, People's Vulnerability and Disasters*, Routledge, London, 1994.
- [8] D. Booth, Towards a Theory of Local Governance and Public Goods Provision, *IDS Bull.* 42 (2) (2011) 11–21.
- [9] P. Bourdieu, *The Logic of Practice*, Polity Press, Cambridge, 1990.
- [10] V.K. Borooah, Caste, Inequality, and Poverty in India, *Rev. Dev. Econ.* 9 (3) (2005) 399–414.
- [11] BSDMA, Nepal–Bihar Earthquake 2015 – A Conceptual Common Framework for Documentation, Bihar State Disaster Management Authority, Patna, 2015.
- [12] H. Bulkeley, A. Jordan, Transnational environmental governance: new findings and emerging research agendas, *Environ. Plan. C: Gov. Policy* 30 (2012) 556–570.
- [13] Census, 2011. Bihar Population Census data, at: (<http://www.census2011.co.in/census/state/bihar.html>) (accessed Sept 2015).
- [14] Central Bureau of Statistics, 2012. National Population and Housing Census 2011 – National Report. Government of Nepal, National Planning Commission Secretariat. CBS, Kathmandu, November 2012.
- [15] R. Chakrabarti, Bihar Breakthrough: The Turnaround of a Beleaguered State, Rupa Publications, India, 2013.
- [16] CIA 2015. The World Factbook. at: (<https://www.cia.gov/library/publications/resources/the-world-factbook/geos/np.html>) (accessed Sept 2015).
- [17] J. Copestake, R. Williams, Political economy analysis, aid effectiveness and the art of development management, *Dev. Policy Rev.* 32 (1) (2014) 133–153.
- [18] S. Corbridge, J. Harriss, C. Jeffrey, *India Today. Economy, Politics and Society*, Polity Press, Cambridge, 2013.
- [19] P. Das, Disaster management in India: policy review and institutional structures, *Asia–Pac. J. Soc. Sci.* IV (1) (2012) 37–52.
- [20] DfID, 2009. Political Economy Analysis: How to Note, A DfID Practice Paper, DfID, London.
- [21] DfID, 2011. Bilateral Aid Review: Technical Report, March 2011. UK Department for International Development. at: (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/214110/FINAL_BAR_20TECHNICAL_20REPORT.pdf) (accessed 13.10.15).
- [22] DfID, 2015, Nepal (No date) UK support to build earthquake resilience in Nepal. Business Case and Intervention Summary. at: (http://iati.dfid.gov.uk/iati_documents/3717621.docx) (accessed October 2015).
- [23] Dixit, A.M., Dwellley-Samat, L.R., Nakarmi, M., Pradhanang, S.B., Tucker, B. 2000. The Kathmandu Valley earthquake risk management project: An evaluation. 12WCEE: 12th World Conference on Earthquake Engineering, Auckland, New Zealand. 30 January – 4 February 2000. Upper Hutt, New Zealand: New Zealand Society for Earthquake Engineering. at: (<http://www.iitk.ac.in/nicee/wcee/article/0788.pdf>) (accessed 1.06.15).
- [24] R. Djalante, F. Thomalla, M.S. Sinapoy, M. Carnegie, Building Resilience to natural hazards in Indonesia: progress and challenges to implementing the Hyogo Framework for Action, *Nat. Hazards* 62 (2012) 779–803.
- [25] J. Drèze, A. Sen, *An Uncertain Glory – India and its Contradictions*, Penguin Books, London, 2013.
- [26] Nivaran Duryog, *The South Asia Disaster Report, Practical Action and Duryog Nivaran*, Colombo, 2013.
- [27] M. Escaleras, N. Anbarci, C.N. Register, Public sector corruption and major earthquakes: A potentially deadly interaction, *Public Choice* 132 (2007) 209–230.
- [28] Foresti, M., O'Neil, T. Wild, L. 2013. Making sense of the politics of delivery: our findings so far. London: ODI Politics and Governance Programme. at: (<http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8346.pdf>) (accessed September 20–15).
- [29] Frontlines 2012. Preparing for the “Big One” in Nepal. Frontlines – Democracy, Human Rights and Governance, January/February 2012. at: (<http://www.usaid.gov/news-information/frontlines/democracy-human-rights-governance/preparing-big-one-nepal>) (accessed 12.10.15).
- [30] D.N. Gellner, Caste, Ethnicity and Inequality in Nepal, *Econ. Polit. Wkly.* 42 (20) (2007) 1823–1828.
- [31] Gellner, D.N., 2015. Could Nepal's Messy Politics Hamper Relief Efforts? The Conversation, 29 April. at: (<http://theconversation.com/could-nepals-messy-politics-hamper-relief-efforts-40903>) (accessed 15.10.15).
- [32] Local Democracy in South Asia: The micropolitics of democratization in Nepal and its neighbours, in: D.N. Gellner, H. Krishna (Eds.), Sage, Delhi, 2008.
- [33] A. Giddens, *The Constitution of Society*, Polity Press, Cambridge, 1984.
- [34] M. Goodwin, The governance of rural areas: Some emerging research issues and agendas, *J. Rural. Stud.* 14 (1) (1998) 5–12.
- [35] Haviland, C., 2015. Why is Nepal's constitution controversial? BBC on line. at: (<http://www.bbc.com/news/world-asia-34280015>) (accessed on 17.10.15).
- [36] K. Hewitt, *Regions of Risk: a Geographical Introduction to Disasters*, Longman, Harlow, Essex, 1997.
- [37] HERR, 2011. Humanitarian Emergency Response Review. 28 March 2011. Chaired by Lord Ashdown. at: (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67579/HERR.pdf) (accessed 12.10.15).
- [38] Himalayan Times 2014. Government declares 72 new municipalities. Himalayan Times, 8 May 2014. at: (<http://www.thehimalayantimes.com/fullNews.php?headline=Govt+declares+72+new+municipalities&NewsID=414271>). (accessed October 2015).
- [39] Human Rights Watch 2015 Investigate deaths during Terai protests. *Human Rights Watch* Online, 15 October. at: (<https://www.hrw.org/news/2015/10/16/nepal-investigate-deaths-during-terai-protests>) (accessed 17.10.15).
- [40] IFRC, 2012. Disaster Relief Emergency Fund (DREF) Nepal Earthquake. DREF operation no. MDRNP005. Update no. 4, 10 February 2012. at: (<http://reliefweb.int/sites/reliefweb.int/files/resources/MDRNP005dref4.pdf>) (accessed 27.10.15).
- [41] India Today, 2011. Bihar outdoes developed states in GDP growth. at: (<http://indiatoday.intoday.in/story/bihar-outdoes-developed-states-in-gdp-growth/1/155056.html>) (accessed July 2014).
- [42] IRIN, 2011. Nepal-India earthquake prompts wake up call. at: (<http://www.irinnews.org/report/93752/nepal-indian-earthquake-prompts-wake-up-call>) (accessed Oct 2015).
- [43] IRIN, 2013. Kathmandu road scheme, demolitions heighten seismic risk. IRIN – Humanitarian News and Analysis. at: (<http://www.irinnews.org/report/97568/kathmandu-road-scheme-demolitions-heighten-seismic-risk>). (accessed 3.06.15).
- [44] K. Jahangiri, Y.O. Izadkhah, A. Montazeri, M. Hosseini, People's perspectives and expectations on preparedness against earthquakes, *J. Inj. Violence Res.* 2 (2) (2010) 85–91.
- [45] S. Jasanoff, M.L. Martello (Eds.), *Earthly Politics: Local and global Environmental Governance*, MIT Press, Cambridge, MA, 2004.
- [46] Jha, G. 2014. Court to the rescue of Bihar babu who took on builders. Mail Online India. 22 July 2014. at: (<http://www.dailymail.co.uk/indiahome/indianews/article-2701963/Court-rescue-Bihar-babu-took-builders.html>). (accessed 17.03.15).
- [47] H. Joffe, T. Rossetto, C. Solberg, C. O'Connor, Social Representations of Earthquakes: A study of people living in three highly seismically active areas, *Earthq. Spectra* 29 (2) (2013) 367–397.
- [48] Jolly, J., 2015. Will Nepal's earthquake bring historic change? BBC on line, 9 June. at: (http://www.bbc.com/news/world-asia-33067693?post_id=10153345172283185_10153422209343185#_) (accessed 17.10.15).
- [49] S.J. Jones, B. Manyena, S. Walsh, Disaster risk governance: evolution and influences, in: A. Collins, S.J. Jones, B. Manyena, J. Jayawikrama (Eds.), *Hazards, Risks and Disasters in Society*, Elsevier, Amsterdam, United States, 2014.
- [50] S.J. Jones, K. Oven, K. Aryal, B. Manyena, Governance struggles and policy processes: A case study from Nepal, *Geoforum* 57 (2014) 78–90.
- [51] A.N. Karanci, B. Aksit, G. Dirik, Impact of a community disaster awareness training program in Turkey: Does it influence disaster related cognitions and preparedness behaviours? *Soc. Behav. Personal.* 33 (3) (2005) 243–258.
- [52] Keefer, P., Neumayer, E. and Plummer, T. 2010. Earthquake propensity and the politics of mortality prevention, World Bank Policy Research Working Paper 5182.
- [53] P.M. Koirala, *Disaster Management Institutions and Systems in Nepal*, Asian Disaster Reduction Center (ADPC), Bangkok, 2014.
- [54] A. Kumar, Illegitimacy of the state in Bihar, *Econ. Polit. Wkly.* 44 (2009) 8–11 (October 31– November 6).

- [55] A. Lavell, J.C. Gaillard, B. Wisner, W. Saunders, D. van Niekerk, National planning and disaster, in: B. Wisner, et al., (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012, pp. 617–628.
- [56] C. Lomnitz, B. Wisner, Earthquakes, in: B. Wisner, et al., (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012, pp. 310–321.
- [57] Macaskill, A. and Sharma, G., 2015. Four months after quakes, Nepal fails to spend any of \$4.1 billion donor money. *Reuters*, 2 September. at: (<http://www.reuters.com/article/2015/09/02/us-nepal-rebuilding-idUSKCN0R20GU20150902>) (accessed 17.10.15).
- [58] Manandhar, N. 2013. Nepal: Corruption inside NGOs, *Telegraph Nepal*, 13.03.13.
- [59] A. Mascarenhas, B. Wisner, Politics: power and disaster, in: B. Wisner, et al., (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012, pp. 48–60.
- [60] Mathew, S., Moore, M., 2011. State incapacity by design: understanding the Bihar story. *Institute of Development Studies Working Paper 366*. at: (<https://www.ids.ac.uk/files/dmfile/Wp366.pdf>) (accessed 16.05.15).
- [61] McClean, D., 2012. Nepal's tragedy in waiting. *UNISDR News Archive*. at: (<http://www.unisdr.org/archive/29755>) (accessed 12.07.13).
- [62] D.K. Mishra, Bihar floods: the inevitable has happened, *Econ. Polit. Wkly.* 43 (2008) 8–12 (36 September 6–12).
- [63] MOHA, 2011. Nepal. National progress report on the implementation of the Hyogo Framework for Action (2009–2011). *Disaster Management Section, Ministry of Home Affairs*. 15 April 2011. at: (http://www.preventionweb.net/files/15615_npl_NationalHFAprogress_2009-11.pdf) (accessed 17.03.15).
- [64] Nezami, S. 2015. With Juldip Narayan gone, realtors swing into action. *The Times of India*. February 26, 2015. at: (<http://timesofindia.indiatimes.com/city/patna/With-Kuldip-Narayan-gone-realtors-swing-into-action/article-show/46375709.cms>) (accessed 3.06.15).
- [65] H.R. Ojha, J. Cameron, C. Kumar, Deliberation or symbolic violence? The governance of community forestry in Nepal, *For. Policy Econ.* 11 (2009) 365–374.
- [66] Pandey, S., 2013. The politics of foreign aid, *The Nepali Times Issue* 620, 31 Aug.
- [67] R. Peet, E. Hartwick, *Theories of Development*, 3rd Edition, Guilford, New York, 2015.
- [68] Global Political Ecology, in: R. Peet, P. Robins, M. Watts (Eds.), *Routledge*, London, 2011.
- [69] *The Routledge Handbook of Political Ecology*, in: T. Perreault, G. Bridge, J. McCarthy (Eds.), *Routledge*, London, 2015.
- [70] Piper, R., 2013. A perfect storm of earthquake and poor governance could cripple Nepal. *The Guardian*, Comment is Free, 12 January 2013. at: (<http://www.guardian.co.uk/commentisfree/2013/jan/12/perfect-storm-earthquake-cripple-nepal>) (accessed 12.08.13).
- [71] RedR, 2013. Reviewing disaster management capacities in Bihar. *RedR India*.
- [72] J. Rigg, K. Oven, Building liberal resilience? A critical review from developing rural Asia, *Glob. Environ. Chang.* 32 (2015) 175–186.
- [73] K. Sharma, The political economy of civil war in Nepal, *World Dev.* 34 (7) (2006) 1237–1253.
- [74] G. Shenhar, I. Radomislensky, M. Rozenfeld, K. Peleg, The impact of a National Earthquake Campaign on Public Preparedness: 2011 Campaign in Israel as a case study, *Disaster Med. Health Prep.* 9 (2) (2015) 138–144.
- [75] R.K. Shrestha, R. Ahlers, M. Bakker, J. Gupta, Institutional dysfunction and challenges in flood control: a case study of the Kosi Flood 2008, *Economic and Political Weekly Vol XLV* (2) (2010) 45–53.
- [76] R. Showstack, Scientists hope to learn lessons from Nepal earthquake, *Eos* 96 (2015) (accessed 17.10.15) at: (<https://eos.org/articles/scientists-hope-to-learn-lessons-from-nepal-earthquake>).
- [77] E. Simpson, *The Political Biography of an Earthquake: Aftermath and Amnesia in Gujarat, India*, C Hurst and Co Publishers Ltd, London; United Kingdom, 2013.
- [78] Sinha, R., Burton, M., Tiwari, G., 2012. Strengthening the institutional framework for flood and water management in Bihar. Developing a strategy for reform (Phase 1). *International Growth Centre (IGC)*. at: (<http://www.theigc.org/wp-content/uploads/2014/09/Sinha-Et-Al-2012-Working-Paper1.pdf>) (accessed 14.10.15).
- [79] P. Slovic, Perceived risk, trust and democracy, *Risk Anal.* 13 (6) (1993) 675–682.
- [80] Start, D. and Hovland, I. 2004. Tools for policy impact: A handbook for researchers. *London: ODI, Research and Policy in Development Programme*. at: (<http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/194.pdf>) (accessed 13.10.15).
- [81] J. Swaffield, D. Bell, Can 'climate champions' save the planet? A critical reflection of neo-liberal social change, *Environ. Polit.* 21 (2) (2012) 248–267.
- [82] K. Tanaka, The impact of disaster education on public preparation and mitigation for earthquakes: a cross-country comparison between Fukui, Japan and the San Francisco Bay Area, California, USA, *Appl. Geogr.* 25 (2005) 201–225.
- [83] Taylor, G. Vatsa, K., Gurung, M., Couture, E., 2013. Review of the Nepal Risk Reduction Consortium (NRRRC). Final Report. 22 August 2013. at: (<http://www.un.org.np/reports/review-report>) (accessed 4.07.14).
- [84] M. Taylor, A. Yin, Active structures of the Himalayan-Tibetan orogen and their relationships to earthquake distribution, contemporary strain field, and Cenozoic volcanism, *Geosphere* 5 (3) (2009) 199–214.
- [85] S. Tekeli-Yesil, N. Dedeoglu, C. Braun-Fahrlaender, M. Tanner, Earthquake awareness and perception of risk among the residents of Istanbul, *Nat. Hazards* 59 (2011) 427–446.
- [86] Tewary, T., 2015. Bihar government suspends Patna Municipal Commissioner. *The Hindu*, December 13, 2014. at: (<http://www.thehindu.com/news/national/other-states/bihar-govt-suspends-patna-municipal-commissioner/article6688770.ece>) (accessed 3.06.15).
- [87] *The Himalayan Times*, 2015. INGOs call for reinstatement of reconstruction authority. *The Himalayan Times On Line*, 1 October. at: (<http://thehimalayantimes.com/business/ingos-call-for-revival-of-reconstruction-authority/>) (accessed 17.10.15).
- [88] *The Hindu*, 2012. Bihar's caste curse. Editorial, *The Hindu*, June 5 2012. at: (<http://www.thehindu.com/opinion/editorial/bihars-caste-curse/article3490670.ece#comments>) (accessed 16.03.15).
- [89] K. Tierney, Public Support and Priorities for Seismic Rehabilitation in the East Bay Region of Northern California, *University of Delaware Disaster Research Center*, Delaware, US, 2000 (Preliminary Paper #296).
- [90] K. Tierney, *The Social Roots of Risk: Producing Disasters, Promoting Resilience*, Stanford University Press, Stanford, CA, 2014.
- [91] Tran, M., 2014. UK MPs Censure DfID over Decision to end Aid to India and South Africa, *The Guardian*, Weds 8th Jan 2014.
- [92] UN OCHA, 2015. Nepal: Earthquake 2015. Situation Report No. 20 (as of 3 June 2015). *UN Office for the Coordination of Humanitarian Affairs and the Office of the Resident and Humanitarian Coordinator*. at: (http://reliefweb.int/sites/reliefweb.int/files/resources/OCHANepalEarthquakeSituationReportNo.20%283June2015%29_Final.pdf) (accessed 3.06.15).
- [93] UNDP, 2011. Bihar: Economic and Human Development Indicators. at: (http://www.in.undp.org/content/dam/india/docs/bihar_factsheet.pdf) (accessed June 2015).
- [94] UNDP, 2014. 2014 Human Development Statistical Tables. at: (<http://hdr.undp.org/data>). (accessed 16.03.15).
- [95] UNISDR, 2015. Global Assessment Report on Disaster Risk Reduction. Making Development Sustainable: The Future of Disaster Risk Management. at: (http://www.preventionweb.net/english/hyogo/gar/2015/en/gar-pdf/GAR2015_EN.pdf) (accessed September 2015).
- [96] UNISDR, 2011. Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland: United Nations International Strategy for Disaster Reduction. at: (<http://www.preventionweb.net/english/hyogo/gar/2011/en/home/download.html>) (accessed 12.07.13).
- [97] United Nations Statistics Division, 2015. Nepal population. at: (<http://countrymeters.info/en/Nepal>) (accessed Sept 2015).
- [98] USGS, 2015. ANNS Comprehensive Catalog. USGS. at: (<http://earthquake.usgs.gov/earthquakes/search/>) (accessed 3.06.15) Query run:.
- [99] Verma, R., 2015. The story of Kuldip Narayan, the David who is taking on the Goliath in Bihar. *Mission Sharing Knowledge*. 28 January 2015. at: (<http://missionsharingknowledge.com/the-story-of-kuldip-narayan-the-david-who-is-taking-on-the-goliath-in-bihar/>) (accessed 3.06.15).
- [100] Wilkinson, E., 2012. Transforming disaster risk management: A political economy approach, *ODI Background Notes*, January 2012.
- [101] Williams, G., 2011. Study on Disaster Risk Reduction, Decentralisation and Political Economy, *Global Assessment Report on Disaster Risk Reduction (GAR)*.
- [102] B. Wisner, P. Blaikie, T. Cannon, I. Davis, *At Risk*, 2nd Edition, Routledge, London, 2004.
- [103] B. Wisner, Risk and the neoliberal state: Why post-Mitch lessons didn't reduce El Salvador's earthquake losses, *Disasters* 25 (3) (2001) 251–268.
- [104] B. Wisner, J.C. Gaillard, I. Kelman (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012.
- [105] B. Wisner, J.C. Gaillard, I. Kelman, Framing Disaster, in: B. Wisner, J. C. Gaillard, I. Kelman (Eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction*, Routledge, London, 2012, pp. 18–34.
- [106] Wisner, B., Kent, G., Carmalt, J., Cook, B., et al., 2011. Political will for Disaster Reduction: What incentives build it and why is it so hard to achieve: A contribution to the review of the draft of GAR Chapters 5, 6, and 7. at: (<http://www.radixonline.org/resources/For%20GAR2011%20-%20Political%20Will%20for%20Disaster%20Reduction%20-%20Draft%207B%20-%2031%20Jan%202011.pdf>) (accessed July 2014).
- [107] World Bank, India: Inclusive Growth and Service Delivery – Building on India's Success, *The World Bank*, Washington, D.C., 2006.
- [108] World Bank, Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention, *The World Bank*, Washington, D.C., 2010.